



# VIA C7-M<sup>TM</sup> Processor



*Simply Mobile*

The VIA C7-M processor is designed to inspire a new breed of mobile devices, featuring a unique architecture that enables high performance with low power, cool temperature operation. As the smallest x86 mobile PC processor, the VIA C7-M processor is targeted specifically at the mainstream, thin and light, and ultra portable notebook segments..

## Secure by Design

The VIA C7-M processor integrates the world's fastest x86 security engine, the **VIA PadLock<sup>TM</sup> Security Co-processor**, which features the world's most comprehensive set of security tools to enable real-time military-grade encryption of data. Boasting AES encryption, Secure Hash Algorithm SHA-1 and SHA-256, and a Montgomery Multiplier to accelerate the encryption process used under RSA public key transmissions, the VIA PadLock Security Co-processor also provides NX Execute Protection to prevent worms from propagating, and a quantum based random number generator to give all the encryption tools an unshakable foundation for security.



## Low Power by Design

Developed from the ground up for low power operation, the VIA C7-M processor is based on the advanced **VIA CoolStream<sup>TM</sup> Architecture** and manufactured using IBM's state-of-the-art 90nm Silicon-on-Insulator (SOI) process, enabling speeds of up to 2.0GHz with ultra low power consumption of around 20W peak power and as low as 100mW (0.1W) idle power.



Power efficiency is further complemented by VIA PowerSaver<sup>TM</sup> technology, which dynamically adjusts the frequency and voltage of the VIA C7-M processor according to system requirements in order to reduce power consumption.

## Performance by Design

With scalability up to 2.0GHz, the VIA C7-M processor integrates the **VIA StepAhead<sup>TM</sup> Technology Suite**, an extensive array of performance-enhancing features that includes the new VIA V4 bus up to 800MHz, sixteen pipeline stages, advanced branch prediction, and an efficiency-enhanced 128KB full-speed exclusive L2 cache.



The VIA C7-M processor also boasts VIA TwinTurbo<sup>TM</sup> technology that incorporates two Phase Lock Loops (PLLs) to allow the processor to switch between ultra low power mode to full speed operation in a single clock cycle, resulting in consistent performance with no latency stutters.

Enhanced digital media performance is ensured with support for SSE2 and SSE3 multimedia instructions and a full-speed Floating Point Unit (FPU), while all VIA V-Series mobile chipsets integrate hardware MPEG-2 and MPEG-4 decoding acceleration for flawless digital video playback and streaming.

Secure, low power, and delivering comprehensive mobile performance, the VIA C7-M processor will drive real innovation in mobile system design, enabling a new generation of light, compact, ultra portable mobile devices that are truly the embodiment of the '**Simply Mobile**' lifestyle.





## Sales Information

Contact one of these offices for information on VIA C7™ processors

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## Feature Overview

Features	Benefits
Clock speeds up to 2.0GHz	Superior performance for mainstream digital media and productivity applications
Full x86 Operating System & software application compatibility	Leverages the richest and most cost-effective software development platforms, including Microsoft® Windows®, Linux and Open BSD
VIA StepAhead™ Technology Suite	
VIA V4 Bus up to 800MHz FSB	High bandwidth connection to system core logic for optimum performance to memory and peripheral devices
16 pipeline stages	Faster processor speed and efficiency
VIA TwinTurbo™ Technology	Enables processor to switch from low power mode to full performance extremely quickly for smoother operation
Efficiency enhanced 128KB full-speed exclusive L2 cache with 32-way associativity	Greater memory optimization for enhanced digital media streaming and overall performance
Sophisticated branch prediction mechanism	Intuitive processing capability for better system operation
MMX, SSE, SSE2 & SSE3 instruction sets	Enhanced 3D and multimedia performance
Full-speed FPU	Additional processing power for 3D graphics, multimedia, and streaming functions
IO/APIC support	Greatly reduces interrupt latency
VIA CoolStream™ Architecture	
90nm SOI (Silicon-on-Insulator) process technology	State-of-the-art 90nm SOI manufacturing process enables VIA C7-M processor to operate up to 15% faster while using 20% less power
World's smallest x86 processor die (30mm²)	Enables a new generation of small form factor designs and new, smaller applications for the x86 platform
Compact VIA nanoBGA2 package (21mm x 21mm)	Excellent thermal characteristics and compact package for greater system design innovation
VIA PowerSaver™ Technology	Allows VIA C7-M processor to dynamically adjust frequency and voltage according to user requirements
VIA PadLock™ Security Co-Processor	
AES Encryption	World's fastest x86 security engine for unbreakable encryption of up to 25 Gb/s (over 160 times faster than current hard drive speeds)
Secure Hash SHA-1 and SHA-256	Hashes messages using SHA-1 and SHA-256 algorithms at a rate of 20 Gb/s for message authentication, providing evidence if message is tampered or altered
Montgomery Multiplier	Provides hardware acceleration of encryption and decryption for public key algorithms such as RSA, reducing processor load
Two Quantum-based Random Number Generators	Provides an unshakable foundation for security, generating truly random numbers at 20 million random bits per second
NX Execute Protection	Prevents worms attaching to programs and executing

## VIA C7-M Processor Guide

Processor Brand	Model Number	Speed	FSB	Package Type	Process Technology
C7-M	795	2.0GHz	533MHz	NanoBGA2	90nm SOI
C7-M	785	1.8GHz	533MHz	NanoBGA2	90nm SOI
C7-M	765	1.6GHz	533MHz	NanoBGA2	90nm SOI
C7-M	754	1.5GHz	400MHz	NanoBGA2	90nm SOI